

Strategies for Accelerating the Income of Smallholder Farmers in Ethiopia

J. Paul Mansingh

Professor, Department of Rural Development & Agricultural Extension,

Ambo University, Ambo, Ethiopia.

Email: paul461967@gmail.com; Tel. +251 946380423

ABSTRACT

By and large, agriculture in Ethiopia is subsistence. The total land area reported for the private peasant holdings was estimated at higher than 18 million hectares and operated by more than 17.1 million agricultural households. The average holding size per household was 1.06 hectares. On the other hand, the average cropland area was 0.88 hectare per household. The agricultural sector remains dominated by subsistence, low input-low output rainfed farming system. Increasing the agricultural productivity is the government's top priority. Productivity enhancements could be achieved through helping farmers transform from purely subsistence to semi-subsistence/semi-commercial farming. This objective embodies the concept of producing more and selling more. To achieve this, the national strategy, "agricultural development-led industrialization" (ADLI) puts agriculture at the forefront of Ethiopia's development process. This strategy is reflected in the Plan for Accelerated and Sustainable Development to End Poverty (PASDEP). A central theme of the PASDEP is a call for accelerated market-based agriculture development with a focus on smallholder farm households. Agricultural Growth Programme (AGP) provides substantial funding for project implementation geared toward technology adoption. Comprehensive Africa Agriculture Development Programme (CAADP) Compact focussed on improving the agricultural research and extension system. Besides, this paper also discusses other extension strategies adopted and implemented for the development of agriculture by the Ministry of Agriculture in Ethiopia. Agricultural sector performed well over the last decade. But, still there is a scope for improvement in productivity, production and market linkages.

Key Words: Strategies, Smallholder Farmers, Ethiopia

INTRODUCTION

In Ethiopia, out of the total grain crop area, 79.88% (9,974,316.28 hectares) was under cereals. Teff, maize, sorghum and wheat were cultivated in 22.95% (about 2,866,052.99 hectares), 16.91% (about 2,111,518.23 hectares), 14.85% (about 1,854,710.93 hectares) and 13.33% (about 1,664,564.62 hectares) of the grain crop area, respectively. Cereals contributed 86.68% (about 231,287,970.83 quintals) of the grain production. Maize, teff, wheat and sorghum made up 26.80% (71,508,354.11 quintals), 16.76% (44,713,786.91 quintals), 15.81% (42,192,572.23 quintals) and 16.20% (43,232,997.52 quintals) of the grain production, in the same order (CSA, 2016).

Ethiopia has made enormous progress in terms of economic growth, agricultural development, and poverty reduction since the famines of the 1970s and 1980s (Hill *et al.*, 2016; Bacheweet *al.*, 2018; Dorosh & Rashid, 2012). Sustained increases in agricultural productivity contributed to overall economic growth and poverty reduction in recent years (Bacheweet *al.*, 2018; Hill *et*

al., 2016). Ethiopia has witnessed rapid and sustained economic growth, averaging 11 percent between 2004 and 2014, pulling millions out of poverty and slashing headcount poverty from 44 percent in 2000 to 30 percent in 2011 (World Bank 2015). The expansion in modern input use appears to have been driven by several factors including high public expenditures in the agriculture sector, especially on agricultural extension services (AES), an improved road network, higher levels of rural education, and favourable domestic and international price incentives (Bacheweet *al.*, 2018).

The national strategy, "agricultural development-led industrialization" (ADLI) puts agriculture at the forefront of Ethiopia's development process. This strategy is reflected in the Plan for Accelerated and Sustainable Development to End Poverty (PASDEP). A central theme of the PASDEP is a call for accelerated market-based agriculture development with a focus on Ethiopia's 13 million smallholder farm households producing around 98 per cent of country's agricultural output.

Despite the rapid economic and agricultural growth of the past two decades, however, Ethiopia remains one of the poorest countries in Africa, with a significant proportion of its population still relying on traditional farming practices, which prevents rapid agricultural transformation and structural changes from taking place. Many constraints and bottlenecks remain, and the challenges that the country currently faces are how to build on the earlier successes and how to accelerate development to maintain rapid overall economic growth and enter into a sustainable structural transformation of the economy. Experts have highlighted the crucial role that AES will continue to play in this rural transformation (Bachewet *et al.*, 2018).

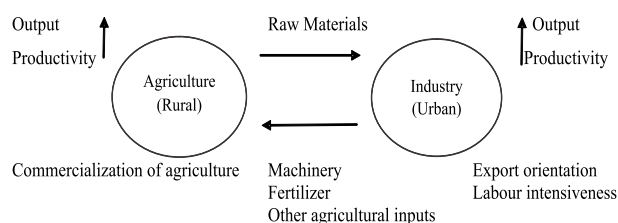
This paper briefly explains the strategies adopted by the Ethiopian government for accelerating agricultural growth and poverty reduction over the years.

Agriculture Development Led Industrialization (ADLI) strategy

The Agriculture Development Led Industrialization (ADLI) strategy was developed in the mid-1990s to serve as a roadmap to transform smallholder agriculture. It is a development strategy to achieve initial industrialization through robust agricultural growth with close linkage between the agricultural and industrial sectors.

The core of ADLI

- Increase agricultural output & productivity
- Increase industrial output & productivity
- Close input-output linkage between the two sectors



Source: Kenichi (2009)

Plan for Accelerated and Sustained Development to End Poverty I (PASDEPI 2006-10)

The PASDEP was launched in 2006. It focussed on a set of drivers in the agricultural sector:

- Strengthening human resources for implementation
- Ensuring the prudent allocation and use of existing land
- Adapting approaches to different agro-ecologies
- Diversifying and commercializing of production
- Integrating agricultural activities with other sectors
- Establishing effective marketing systems and
- Promoting sustainable natural resource management particularly with climate adaptation

Achievements

- Sustained growth in cereal productivity
- Expansion of human resource capacities in AES

Plan for Accelerated and Sustained Development to End Poverty II (PASDEPI 2010-14)

PASDEP II focussed on

- Capacity building of smallholder farmers
- Enhanced conservation of natural resources
- Involvement of private investors
- Food security

Comprehensive African Agricultural Development Program (CAADP) Compact

CAADP focus on agricultural productivity & food security, ensuring safety nets and accelerating broad-based economic growth.

The CAADP pillars are:

- Land & water management
- Market access
- Food supply & hunger
- Agricultural research

Agricultural Growth Program (AGP)

AGP focus on sectoral financing of activities emerged from the joint MoARD and donor working group on Rural Economic Development and Food Security (RED-FS). The AGP targets 83 high potential woredas in four regions *viz.*, Oromia, Amhara, SNNPR and Tigray.

The approach provides a bottom-up, decentralised planning to identify key interventions and projects at the kebele and woreda levels. Project proposals are submitted for review by woreda and regional officials in the respective Bureaus of Agriculture and Rural Development (BoARD) for planning. Substantial funding will be allotted for local project geared toward a combination of technology adoption and behaviour change to enhance productivity and the commercialization of production surpluses with improved marketing and value addition.

Food Security Program (FSP)

FSP targets 273 woredas with chronic food insecurity, malnutrition and vulnerability.

FSP has four components.

1. Household asset building program for financial services
2. Complementary community investment program for irrigation investments
3. Productive safety net program (PSNP) for food and cash transfers
4. Resettlement program in lowland areas to higher productivity ecologies.

Growth & Transformation Plan (GTP)

GTP I focused on accelerating growth in production of traditional crops. It has done so by promoting the adoption of improved technologies by smallholder farmers, and by increasing investment in rural infrastructure, particularly for irrigation and improved watershed management. It also emphasized the need to ensure food security across all sections of Ethiopian society.

The GoE released its national five-year Growth and Transformation Plan (GTP) (2010–2015), aiming to further expand AES. By 2014/15, it was estimated that AES would reach 14.6 million beneficiaries (MoFED, 2010). Accordingly, 13.95 million farmers were reached by the end of the plan period – 95 percent of the target set for 2014/15 (NPC, 2016).

During GTP II, while accelerated growth in agricultural productivity continues to be an important area of focus, a gradual shift in emphasis

towards high value crops and livestock production is being envisaged. This is to be complemented by the establishment of a market system that benefits farmers and non-farm rural actors. Similarly, natural resources development also continues to be an important area of emphasis.

However, the GTP II goes beyond this to promote more sustainable farming practices and enhanced conservation of indigenous biodiversity resources as well as livelihood development from natural resources (forestry, rehabilitated lands, water resources, *etc.*). A third area of emphasis is food security that continues to be a challenge. Finally, specific focus is placed on building institutional capacity for implementing and monitoring agricultural development. An underlying principle of the GTP II for agricultural development is that environmental sustainability must be maintained, climate change adaptation and mitigation should be promoted, and growth should be broad based and inclusive, with a particular focus on engaging women, youth and poor households.

GTP II has been developed around the following five high-level objectives for the agriculture sector:

1. Accelerated growth in agricultural production with a gradual shift towards high value commodities
2. Sustainable, broad-based, and inclusive agricultural development
3. Elimination of national food gap (and ultimately, contribution by the agriculture sector to national capital formation)
4. Establishment of a market system that benefits farmers and non-farm actors
5. Improved implementation capacity: institutional and human resource (attitudes, skills, competency) These high-level objectives are to be achieved through four strategic objectives within the agriculture sector and complementary objectives in the trade and industry, finance, infrastructure, roads, water and energy sectors.

i. Increased and market-oriented crop production and improved productivity focusing on strategic crops:

To promote increased crop production, adoption of improved crop technologies and practices by smallholder farmers will be promoted. Additionally, increased investment in medium and large scale commercial farming with enhanced linkages to smallholders throughout-grower schemes and contract farming arrangements is envisaged. With a view of producing for the market, the GTP II also plans for enhanced services for testing and certification regarding chemical use and resulting residues, enhanced cooperative capacity and efficiency, and reduced pre- and post-harvest losses.

ii. Increased livestock production and productivity:

Promoting the adoption of improved livestock husbandry practices/ technologies, feed production technologies, and a stronger livestock health system are central elements of the GTP II approach to increased livestock production and productivity. As in the case of initiatives focused on increased crop production, private sector investment in commercial livestock enterprises are envisaged, as is the strengthening of systems to allow certification for and to ensure compliance of Ethiopian livestock products to international standards. Finally, GTP II has specifically planned

for measures to reduce GHG emissions from the sub-sector.

iii. Reduced degradation and improved productivity of natural resources:

Watershed development, irrigation development, forestry development (including agro-forestry) and bio-diversity conservation are the main elements of the GTP II interventions working towards this strategic objective.

iv. Enhanced food security at national and household level:

Initiatives that contribute to enhanced food security are a continuation from GTP I. They comprise strengthening disaster prevention and response ability as well as ensuring adequate and timely transfers and promoting resilience among chronically food insecure households. The GTP II also seeks to address issues of nutrition in a more systematic way. In addition to chronically food insecure households, the GTP II identifies pastoralists and agro-pastoralists as requiring *s p e c i f i c s u p p o r t* (Source : <http://www.ata.gov.et/ta/gtp-ii-overview/>).

In the second Growth and Transformation Plan (GTP II), released in May 2016, the overall target was set to increase total AES beneficiaries from 13.95 million in 2014/15 to 18.237 million by 2019/20 (NPC, 2016).

Table 1
Historical evolution of agricultural extension activities in Ethiopia

Period	Program / Event	Objectives / Highlights	Remarks
1953–1963	Establishment of Imperial Ethiopian College of Agriculture and Mechanical Arts (IECAMA)	Currently known as Haramaya University, is said to be the start of AES in Ethiopia. The college recruited graduates of the then Jimma and Ambo agricultural high schools as Development Agents (DAs) and concentrated its efforts around the areas where it had agricultural experimental stations.	Major constraints were limited to outreach and lack of complementary services such as inputs and credit.
1963	Transfer of AES mandate to the Ministry of Agriculture	The mandate to provide AES was moved to the then Ministry of Agriculture (MoA), structured as a department at the national level and AES personnel assigned at the provincial level.	This new structure did not become active until 1968
1967–1975	Comprehensive Integrated Package Projects	Several pilot comprehensive package AES programs were implemented	Since all of these programs and projects were operational in only small areas, the vast majority of the country was out of their reach. Evaluation studies revealed that this approach did not benefit smallholders and was too expensive to scale out and up, both financially and in terms of manpower requirements.

Period	Program / Event	Objectives / Highlights	Remarks
1971-1979	Minimum Package Project I (MPP-I)	The MPP-I established minimum package areas within a 10-km radius of all-weather roads and within a 50-75 km distance designed to serve about 10,000 households each. Each minimum package area used 5 AES agents, about 5 input supply workers, and 1 AES supervisor. The project managed to establish 55 minimum package areas with 346 development centers in 280 woredas out of the total 580 woredas in the country by then. The military Derg regime that followed continued with this project (1974- 1979)	The major draw-back was minimal attention given to the livestock sector, not benefiting smallholders, and not being able to reach the vast majority of farmers
1980-1985	Minimum Package Project II (MPP-II)	A significant change from the MPP-I was that the AES responsibility was given to the commodity-based specialized departments in the Ministry. Regions also adopted a similar structure and woredas became the lowest structures where AES personnel were located. The development centres established under MPP-I were closed and AES personnel were reassigned to the woreda level.	This was failed due to shortage of AES personnel, and burdening AES agents with activities such as tax collection and organization of cooperatives
1985-1994	Peasant Agricultural Development Extension Project (PADEP) using Training and Visits system	PADEP aimed to provide inputs, credit, and AES to smallholders organized into approximately 2,900 farmer service cooperatives using a Training and Visit AES approach. As a successor to MPP-II, PADEP aimed to cover 8 development zones across the country, but only received financing sufficient for 3 zones, all located in high-potential areas.	AES had been reduced to instruments of political control over the peasantry, while input and credit provision was largely focused on covering the inefficiencies of large state farms and peasant collective
1993-1994	Sasakawa-Global 2000 pilot program (SG-2000)	The major objective of SG-2000 was to increase agricultural food production at the level of small-scale farmers and stimulate the linkage between research and AES so that agricultural technologies within the country could be made available to the AES system. During this time, available agricultural technologies were assessed; technology packages for maize, wheat, sorghum, and teff were developed; and about 1,600 farmers participated in farm demos in Oromiya, SNNP, Tigray, and Amhara Regions.	Major productivity increases were achieved which convinced the GoE to adopt and expand it as a National Agricultural Extension Intervention Program (NAEIP) through the PADETES in 1995
1995 to present	Participatory Demonstration and Training Extension System (PADETS or PADETES)	PADETS or PADETES is promoted as the national AES system and builds on the success of the SG-2000. It falls under the National Agricultural Extension Intervention Program (NAEIP). The goal of PADETES is to improve incomes via increasing productivity, ensure self-sufficiency in food production, establish farmers' organizations, increase production of export crops, conserve natural resources, and increase women's participation in development.	Limited evaluation and impact assessment. Available studies show mixed result (Dercon <i>et al.</i> , 2009; Davis, Swanson, and Amudavi, 2009; Nisrane <i>et al.</i> , 2011; Elias <i>et al.</i> , 2013; Krishnan and Patnam, 2014; Abayet <i>et al.</i> , 2017; Berhane, 2017; Bacheweet <i>et al.</i> , 2018).
2004	Agricultural Technical and Vocational Education and Training colleges (ATVETs) and farmer training centers in each kebele	In line with decentralization processes, ATVETs were established to train a new cadre of AES workers and farmer training centres (FTCs) were established to become the focal point of AES support in every kebele in the country.	Limited evaluation and impact assessment. Available studies show mixed results. But a recent study by Bacheweet <i>et al.</i> , (2018) attributes agricultural productivity growth to investments in AES programs as a main driver
2006-2012	Rural Capacity Building Project (RCBP)	The RCBP aimed to increase agricultural productivity, focusing on investments in building technical, physical, and managerial capacity of the AES system and its linkages with the research system.	Mixed results. Project was given overall moderately unsatisfactory rating in its Implementation and Completion Report (World Bank, 2013). Unclear impact on agricultural productivity and quality of AES services based on project documents. Recent

Period	Program / Event	Objectives / Highlights	Remarks
			study shows some positive impacts (Buehren <i>et al.</i> , 2017).
2010; 2016	Growth and Transformation Plan (GTP); GTP II	GTP I aimed for AES reach to 14.6 million beneficiaries by 2014/2015; GTP II aims to increase beneficiaries to 18.237 million by 2019/2020.	GTP I reached 95% of target.
2011	Farmer development groups and model farmers	Trainings and demonstration of improved technologies and best practices were carried out on model farmers' fields to advance their skills.	No evaluation yet.

Source: Guushet *et al.*, (2018)

From 1993 up to 2006

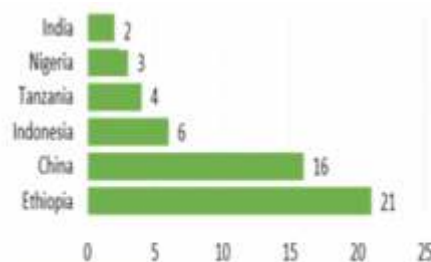
In 1993, a pilot AES program was initiated by Sasakawa Africa Association and Global 2000 of the Carter Centre (SG-2000), a nongovernmental organization. The program promoted the use of productivity-enhancing technologies by providing inputs and credit, and training using demonstration plots (0.25 to 0.50 hectares), supervised by researchers and DAs. SG-2000 demonstrated that with sufficient inputs, supervision, and management, farmers could double or triple their yields of maize and wheat (Davis *et al.*, 2010; Gebremedhin, Hoekstra & Tegegne 2006). In 1995, the transitional government of Ethiopia adopted the SG-2000 pilot program as its national AES system, referred to as the Participatory Demonstration and Training Extension System (PADETES).

The goal of PADETES/NAEIP is to improve incomes by increasing productivity, ensuring self-sufficiency in food production, establishing farmers' organizations, increasing production of export crops, conserving natural resources, and increasing women's participation in development. The aim of the program was to reach about 9 million farmers, using the adapted Training and Visit model, initially promoted by the World Bank in various countries. Farmers who agree to participate in the program make a 25–50 percent down payment on the inputs used, with the remainder to be paid following harvesting. The rates for advance payment vary according to the types of technologies to be used and the resource level of the farming communities. Loans for crop-based packages are

repaid immediately after the harvest, whereas for other AES packages, various repayment options can be made depending on the types of development program undertaken.

From 2006 onwards

Based on PADETES/NAEIP assessments, the GoE realized the need for additional AES staff in the system. Agricultural Technical and Vocational Education and Training (ATVETs) colleges were founded to increase the number of Development Agents (DAs) assigned at the decentralized level (Davis *et al.*, 2010). Estimates over the period 2010 to 2016 indicate that Ethiopia has one of the most extensive AES systems in the world in terms of its extension agent-to-farmer ratio. As shown in Figure 1, by 2010, Ethiopia's DA-farmer ratio was estimated at one DA per 476 farmers—that is, 21 DAs per 10,000 farmers. In comparison, figures for Tanzania stood at one DA per 2,500 farmers—that is, 4 DAs per 10,000 farmers.



Source: Davis *et al.* (2010).

Note: For Ethiopia, figures in 2016/2017 show a higher ratio of 43 Development Agents per 10,000 farmers.

Figure 1. Number of agricultural extension agents per 10,000 farmers in selected countries

In addition to the human capital, the GoE established more than 15,000 farmer training centres

Table 2
Milestones in the evolution of Ethiopia's agricultural extension services since 1950

Year	AES posts/ FTCs	AES agents or DAs, number	Beneficiaries	Sources
1953	77	132	-	IPMS
1971	346	330	-	IPMS
1993/94	-	-	1,600	SG-2000
1995	-	2,500	32,000	IPMS
2002	-	15,000	4.2 million	IPMS, Davis et al. (2010)
2008	6,486	47,522	9 million	Spielman, Kelemwork, and Alemu (2011)
2014/15	11,000	-	13 million	GTP I
2016/17	>15,000	72,402	16.7 million	MoANR
Plan for 2019/20	18,000	-	18.2 million	GTP II

Source: Various project documents and reports.

Note: AES = agricultural extension service; FTC = Farmer training center; IPMS= Improving Productivity and Market Success; SG=Sasakawa Global; GTP=Growth and Transformation Project.

(FTCs) throughout the country (about one FTC at each kebele) during this period. These FTCs were designed as local-level focal points for farmers to receive information, training, demonstrations, and advice, and included classrooms and demonstration fields. How fully resourced and functional these FTC are having always been an issue and needs a standalone detailed study. Davis *et al.*, (2010) estimated that only about 30 percent of these FTCs are functional. Anecdotal evidence and additional field visits suggest that many are poorly resourced or completely abandoned.

In 2011, a new AES delivery approach was designed to ensure more efficient delivery of extension services to farmers. In addition to the existing system of training through FTCs and DA visits to farmers, farmer development groups were created. These groups consist of 20 to 30 farmers. Each development group has sub-development groups organized with five members, led by a model farmer (otherwise known as the one-to-five network or syndicate). In addition to FTC training, demonstration of improved technologies and best practices are carried out on model farmers' fields to advance their skills. This is expected to help create a better learning process among farmers through group settings and facilitates a favourable environment for scaling up best practices.

Ethiopia's AES system is also systematically testing the role of ICT to improve

AES quality and coverage. The recently scaled-up Agricultural Information Hotline—Interactive Voice Response and a Short Message System—is one example; it provides real-time and immediate access to vital agronomic information. Farmers can call the hotline for free and receive information on a wide range of topics on all major crops grown in the country. It also sends customized content (in case of drought, pest, and disease) to callers based on crop and geography data captured upon registration. A community-centric video approach to AES provision is another ICT-based method the government is piloting with Digital Green. On the front end, the approach produces localized videos (that is, videos that feature local farmers and are tailored to local needs) on agricultural technologies and practices. AES agents facilitate the video dissemination or screening. On the back end, extensive monitoring data are collected and analysed for course corrections and tracking performance.

CONCLUSION

The review of various studies revealed the following gaps to be addressed and require strategic interventions: lack of major investments in irrigation development, value chain efficiency improvement, private sector participation in fertiliser production & supply, post-harvest losses and institutional gaps related to sector-wide linkages, relationships and synergies.

The GoE drafted a new AES strategy in collaboration with the Ethiopian Agricultural Transformation Agency (ATA), building around nine pillars: (i) strengthening and building the capacity of FTCs; (ii) enhancing agricultural knowledge and information systems; (iii) enhancing client-oriented and multi-actors' AES; (iv) facilitating market linkages; (v) mainstreaming gender, youth, and nutrition; (vi) enhancing environmental management and

sustainability; (vii) enhancing institutional coordination and linkages among partners; (viii) enhancing the development and utilization of human resources; and (ix) establishing strong and dynamic result-based monitoring, evaluation, and learning systems. The strategy is yet to be implemented.

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REFERENCES

1. Abay, K.A., G. Berhane, A.S. Taffesse, K. Abay, and B. Koru. (2017). Estimating Input Complementarities with Unobserved Heterogeneity: Evidence from Ethiopia. *Journal of Agricultural Economics*, 69 (2): 495-517. <https://doi.org/10.1111/1477-9552.12244>
2. Bachewe, F.N., G. Berhane, B. Minten, and A.S. Taffesse. (2018). Agricultural Transformation in Africa? Assessing the Evidence in Ethiopia. *World Development*, 105(2018): 286-298. <https://doi.org/10.1016/j.worlddev.2017.05.041>
3. Berhane G. (2017). The State of Ethiopia's Agricultural Extension System and Effects on Modern Input Use and Productivity. Draft paper. Addis Ababa: International Food Policy Research Institute.
4. Buehren, N., M.P. Goldstein, E. Molina, and J. Vaillant. (2017). The Impact of Strengthening Agricultural Extension Services: Evidence from Ethiopia. World Bank Policy Research Working Paper 8169. Washington, DC: World Bank.
5. CSA (2016). Report on Area and Production of Major Crops (Private Peasant Holdings, Meher Season) Volume I, Agricultural Sample Survey 2015/16. FDRE.
6. Davis, K., B. Swanson, and D. Amudavi. (2009). Review and Recommendations for Strengthening the Agricultural Extension System in Ethiopia. Washington, DC: International Food Policy Research Institute.
7. Davis, K., B. Swanson, D. Amudavi, D. A. Mekonnen, A. Flohrs, J. Riese, C. Lamb, and E. Zerfu. (2010). In-Depth Assessment of the Public Agricultural Extension System of Ethiopia and Recommendations for Improvement. International Food Policy Research Institute (IFPRI) Discussion Paper 1041, Washington, DC: IFPRI.
8. Dercon, S., D.O. Gilligan, J. Hoddinott, and T. Woldehanna. (2009). The Impact of Agricultural Extension and Roads on Poverty and Consumption Growth in Fifteen Ethiopian Villages. *American Journal of Agricultural Economics* 91 (4): 1007-1021.
9. Dorosh, P., and S. Rashid. (2012). Food and Agriculture in Ethiopia: Progress and Policy Challenges. Philadelphia: University of Pennsylvania Press.
10. Elias, A., Nohmi, M., Yasunobu, K. and Ishida, A. (2013). Effect of agricultural extension program on smallholders' farm productivity: Evidence from three peasant associations in the highlands of Ethiopia. *Journal of Agricultural Science* 5 (8), p.163.
11. Gebremedhin, B., D. Hoekstra, and A. Tegegne. (2006). Commercialization of Ethiopian Agriculture: Extension Service from Input Supplier to Knowledge Broker and Facilitator. Addis Ababa: International Livestock Research Institute.
12. Guush Berhane, Catherine Ragasa, Gashaw Tadesse Abate, and Thomas Woldu Assefa (2018). The state of agricultural extension services in Ethiopia, Strategy Support Program Working Paper 118. Ethiopian Development Research Institute (EDRI).
13. Hill, R., G. Inchauste, N. Lustig, E. Tsehaye, and T. Woldehanna. (2016). Fiscal Incidence Analysis for Ethiopia. In *The Distributional Impact of Taxes and Transfers: Evidence From Eight Developing Countries*. G. Inchauste and N. Lustig, eds. Washington, DC: World Bank. pp. 79-111.

14. Kenichi Ohno (June, 2009). ADLI and Future Direction for Industrial Development. [Power Point Slides]. Retrieved from http://www.grips.ac.jp/forum/af-growth/support_ethiopia/document/Jun09_ADLI_2.pdf
15. Krishnan, P., and M. Patnam. (2014). Neighbors and Extension Agents in Ethiopia: Who Matters More for Technology Adoption? *American Journal of Agricultural Economics* 96 (1): 308–327.
16. MoFED (Ministry of Finance and Economic Development). (2010). Growth and Transformation Plan: 2010/11–2014/15. Volume I: Main Text. Addis Ababa: MoFED.
17. Nisrane, F., G. Berhane, S. Asrat, G. Getachew, A.S. Taffesse, and J. Hoddinott. (2011). Sources of Inefficiency and Growth in Agricultural Output in Subsistence Agriculture: A Stochastic Frontier Analysis.” Ethiopia Strategy Support Program Working Paper 19. Addis Ababa: International Food Policy Research Institute.
18. NPC (National Planning Commission). (2016). Growth and Transformation Plan II (GTP II) (2015/16–2019/20): Main Text. Addis Ababa: NPC.
19. Spielman, D.J., D. Kelemwork, and D. Alemu. (2011). Seed, Fertilizer, and Agricultural Extension in Ethiopia. In *Food and Agriculture in Ethiopia: Progress and Policy Challenges*, Dorosh, P., and S. Rashid, eds. Philadelphia: University of Pennsylvania Press. pp. 84-122.
20. World Bank. (2013). Ethiopia – Rural Capacity Building Project. Washington, DC: World Bank.
21. World Bank. (2015). Ethiopia Poverty Assessment 2014. Washington, DC: World Bank.

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